

REMARKS

In the Office Action mailed October 23, 2002, claims 1 and 16 were rejected under 35 USC 103(a) as being unpatentable over Cao (U.S. Patent No. 6,396,607); claim 2 was rejected under 35 USC 103(a) as being unpatentable over Cao in view of Cao (U.S. Patent No. 6,104,515) and further in view of Kaede et al. (U.S. Patent No. 5,467,213); claim 14 was rejected under 35 USC 103(a) as being unpatentable over Cao '607 in view of Cao '515 and further in view of Newburg et al. (U.S. Patent No. 5,109,449); and claim 15 was rejected under 35 USC 103(a) as being unpatentable over Cao '607 in view of Cao '515 and further in view of Takara et al. (U.S. Patent No. 5,646,774).

Claims 1, 2, and 14-16 are cancelled, thus obviating the foregoing rejections.

Also in the Action, the Examiner asserted objections to claims 3-13. The Examiner also asserted in the Action that claims 3-13 would be allowable if amended into independent form. Claims 3-13 are amended into independent form. It is understood and therefore submitted that claims 3-13 are allowable.


A Version with Markings to Show Changes Made to the claims is included herewith.

In accordance with the foregoing, claims 3-13 are pending and under consideration.

In addition, the Examiner has initialed, signed and returned to the undersigned copies of sheets 1 and 2 of Form PTO-1449 submitted with the Information Disclosure Statement filed March 13, 2001. However, the Examiner did not initial reference AG (JP 0825113A) on Sheet 1 of Form PTO-1449. The Examiner is respectfully requested to initial reference AG (JP 0825113A) on Sheet 1 of the subject Form PTO-1449 and return a copy of same to the undersigned.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.



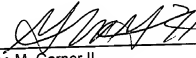
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If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please CANCEL claims 1, 2, and 14-16 without prejudice or disclaimer.

Please AMEND the following claims:

3. (ONCE AMENDED) An optical signal processing device [according to claim 1]

comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input port being adapted to accept WDM signal light obtained by wavelength division multiplexing a plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and

said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;

a detector for detecting the modulation-phase of at least one of said plurality of optical

signals; and

a controller for controlling said delay adjuster according to said modulation-phase

detected by said detector, wherein said detector comprises:

an optical filter for passing an optical signal having a reference wavelength;

a circuit for regenerating a reference clock according to said optical signal passed

through said optical filter;

a tunable optical filter for passing an optical signal having an arbitrary wavelength;

a circuit for regenerating a clock according to said optical signal passed through

said tunable optical filter; and

a phase comparator for comparing the phases of said reference clock and said

clock.

4. (ONCE AMENDED) An optical signal processing device [according to claim 1]

comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input

port being adapted to accept WDM signal light obtained by wavelength division multiplexing a plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;

a detector for detecting the modulation-phase of at least one of said plurality of optical signals; and

a controller for controlling said delay adjuster according to said modulation-phase detected by said detector, wherein said detector comprises:

a tunable optical filter for passing an optical signal having an arbitrary wavelength;

a circuit for regenerating first and second clocks according to a first optical signal having a first wavelength passed through said tunable optical filter and a second optical signal having a second wavelength passed through said tunable optical filter, respectively; and

a phase comparator for comparing the phases of said first and second clocks.

5. (ONCE AMENDED) An optical signal processing device [according to claim 1] comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input port being adapted to accept WDM signal light obtained by wavelength division multiplexing a plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;

a detector for detecting the modulation-phase of at least one of said plurality of optical signals; and

a controller for controlling said delay adjuster according to said modulation-phase detected by said detector, wherein said detector comprises:

an optical filter for passing an optical signal having a reference wavelength;

a circuit for generating a reference clock according to said optical signal passed through said optical filter;

a tunable optical filter for passing an optical signal having an arbitrary wavelength;
 a circuit for regenerating a clock according to said optical signal passed through
 said tunable optical filter; and
 a phase comparator for comparing the phases of said reference clock and said
 clock.

6. (ONCE AMENDED) An optical signal processing device [according to claim 1]
 comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input
 port being adapted to accept WDM signal light obtained by wavelength division multiplexing a
 plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and
 said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;

a detector for detecting the modulation-phase of at least one of said plurality of optical
 signals; and

a controller for controlling said delay adjuster according to said modulation-phase
 detected by said detector, wherein said detector comprises:

a pulse light source for generating reference pulse light;

an optical filter for passing an optical signal having an arbitrary wavelength; and

a gain saturation device for accepting said optical signal passed through said
 optical filter and said reference pulse light;

said controller comprising a circuit for controlling said delay adjuster so that the
 average power of light output from said gain saturation device is reduced.

7. (AS ORIGINAL) An optical signal processing device according to claim 6,
 wherein said reference pulse light has a clock frequency $1/N$ (N is a natural number) times the
 clock frequency of each of said plurality of optical signals.

8. (AS ORIGINAL) An optical signal processing device according to claim 6, further
 comprising means for detecting the distribution of pulse heights of each of said plurality of

optical signals according to the average power of said light output from said gain saturation device.

9. (ONCE AMENDED) An optical signal processing device [according to claim 1] comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input port being adapted to accept WDM signal light obtained by wavelength division multiplexing a plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;

a detector for detecting the modulation-phase of at least one of said plurality of optical signals; and

a controller for controlling said delay adjuster according to said modulation-phase detected by said detector, wherein said detector comprises:

a first optical filter for passing an optical signal having a first wavelength;

a second optical filter for passing an optical signal having a second wavelength;

and

a gain saturation device for accepting said optical signal passed through said first optical filter and said optical signal passed through said second optical filter;

said controller comprising a circuit for controlling said delay adjuster so that the average power of light output from said gain saturation device is reduced.

10. (ONCE AMENDED) An optical signal processing device [according to claim 1] comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input port being adapted to accept WDM signal light obtained by wavelength division multiplexing a plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;
a detector for detecting the modulation-phase of at least one of said plurality of optical
signals; and

a controller for controlling said delay adjuster according to said modulation-phase
detected by said detector, wherein said detector comprises:

a pulse light source for generating reference pulse light;
 an optical filter for passing an optical signal having an arbitrary wavelength; and
 a saturable absorption device for accepting said optical signal passed through said
 optical filter and said reference pulse light;

said controller comprising a circuit for controlling said delay adjuster so that the
 average power of light output from said saturable absorption device is increased.

11. (AS ORIGINAL) An optical signal processing device according to claim 10,
 wherein said reference pulse light has a clock frequency $1/N$ (N is a natural number) times the
 clock frequency of each of said plurality of optical signals.

12. (AS ORIGINAL) An optical signal processing device according to claim 10,
 further comprising means for detecting the distribution of pulse heights of each of said plurality
 of optical signals according to the average power of said light output from said saturable
 absorption device.

13. (ONCE AMENDED) An optical signal processing device [according to claim 1]
comprising:

an optical demultiplexer having an input port and a plurality of output ports, said input
port being adapted to accept WDM signal light obtained by wavelength division multiplexing a
plurality of optical signals having different wavelengths;

an optical multiplexer having an output port and a plurality of input ports;

a plurality of optical paths for respectively connecting said plurality of output ports and
said plurality of input ports;

at least one delay adjuster provided on at least one of said plurality of optical paths;

a detector for detecting the modulation-phase of at least one of said plurality of optical
signals; and

a controller for controlling said delay adjuster according to said modulation-phase detected by said detector, wherein said detector comprises:

a first optical filter for passing an optical signal having a first wavelength;

a second optical filter for passing an optical signal having a second wavelength;

and

a saturable absorption device for accepting said optical signal passed through said first optical filter and said optical signal passed through said second optical filter;

said controller comprising a circuit for controlling said delay adjuster so that the average power of light output from said saturable absorption device is increased.

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